

THE FLEA BEETLE GENUS *APHTHONA* CHEVROLAT  
(COLEOPTERA: CHRYSOMELIDAE) OF SOUTHERN INDIA, WITH  
DESCRIPTIONS OF SEVEN NEW SPECIES

K. D. PRATHAPAN AND A. S. KONSTANTINOV

(PKD) Department of Entomology, University of Agricultural Sciences, Bangalore 560 065, India; (ASK) Systematic Entomology Laboratory, PSI, Agricultural Research Service, U.S. Department of Agriculture, % National Museum of Natural History, Smithsonian Institution, Washington D.C. 20560-0168, U.S.A. (e-mail: akonstan@sel.barc.usda.gov)

---

*Abstract.*—Seven new species of *Aphthona* from Southern India are described and illustrated: *A. chrozophorae*, *A. glochidionae*, *A. macarangae*, *A. mallotae*, *A. marataka*, *A. nandiensis*, and *A. phyllanthae*. A key for adult identification and geographical distribution and host plant data are provided.

*Key Words:* Chrysomelidae, *Aphthona*, Southern India, new species, host plants

---

*Aphthona* Chevrolat is one of the most speciose and morphologically diverse genera of flea beetles containing 93 species just in the Oriental Region (Konstantinov and Lingafelter 2002). Known *Aphthona* larvae are root feeders, whereas the adults feed externally on leaves. The majority are narrowly oligophagous or rarely monophagous on plants of at least 11 families (Konstantinov 1996); however, most *Aphthona* species feed on plants of the family Euphorbiaceae (Konstantinov 1998, Jolivet and Hawkeswood 1995) and hence are potential candidates for the biological control of weedy *Euphorbia* species.

Twelve species of *Aphthona* are known from India (Chûjô 1961, Scherer 1969, Konstantinov and Lingafelter 2002). These do not include *A. azurea* Jacoby and *A. postmaculata* Medvedev which have been removed from *Aphthona* (Konstantinov and Lingafelter 2002). Only three species of *Aphthona* were known from Southern India prior to this study: *A. atripes* (Motschulsky), *A. kanaraensis* Jacoby, and *A. tamila* Konstantinov and Lingafelter. Southern In-

dia, as defined here, includes Andhra Pradesh, Karnataka, Tamil Nadu, and Kerala states. The western part includes the southern Western Ghats mountains, which is one of the biologically most diverse regions of India accounting for 22.5% of India's endemic plants (Nayar 1996). This region, along with Sri Lanka, is among 25 globally recognized "biodiversity hotspots" (Myers et al. 2000). Extensive collecting efforts by the senior author yielded seven new species which are described below. The host plants for adults of five of the new species were identified, all of which are Euphorbiaceae, and new host plants were found for adults of *A. nigrilabris* and *A. tamila*.

#### MATERIAL AND METHODS

The descriptive terminology follows Konstantinov (1998). All the measurements are in millimeters and the mean values are provided in brackets. In the case of male and female genitalia, only a single specimen was measured. Other measurements are from ten randomly picked specimens

(five males and females each), wherever available.

The holotypes are deposited in the collection of the National Museum of Natural History, Smithsonian Institution, Washington DC (USNM). Paratypes are deposited in the collections of the University of Agricultural Sciences, Bangalore (UABI); Pusa National Collection, Indian Agricultural Research Institute, New Delhi (PNCI); The Natural History Museum, London (BMNH); National Museum of Natural History, Washington DC; and the personal collection of K. D. Prathapan, Bangalore, India (KPPC). The other depositories for studied material are abbreviated as follows: Institute Royal des Sciences Naturelles de Belgique, Brussels, Belgium (ISNB); Natural History Museum, Basel, Switzerland (NHMB); and Takizawa collection, Oyama Tochigi, Japan (TCOJ).

#### GENERIC DIAGNOSIS OF *APHTHONA*

Members of this genus are small to moderate in size (1–4 mm), oval or oblong-oval and more or less convex in lateral view. Based on previous cladistic study, three synapomorphic characters define *Aphthona*: elytron length/width ratio less than 2.85; anterior part of metanotal ridge *e* attached below middle of ridge *b-1*; and setae on ventral side of first metatarsomere sinuate (Konstantinov 1998). A combination of a few external, more easily observed characters is also useful for recognizing *Aphthona*: frontoclypeal suture with several rows of short setae; sulci surrounding antennal calli well developed; frontal ridge relatively short and convex in lateral view; anterofrontal ridge as low as frontal ridge, lowering laterally, pronotum with or without antebasal transverse impression (if impression is present, it is shallow and is never limited laterally by longitudinal grooves); procoxal cavity open behind; intercoxal prosternal process and mesosternum narrow; elytral punctation irregular, rarely with irregular striae on disk; dorsal surface of metatibia apically flat, apical

spur inserted laterally; first metatarsomere comparatively long, as long as two following tarsomeres combined, but never more than half as long as metatibia.

#### KEY TO THE SOUTHERN INDIAN SPECIES OF *APHTHONA*

1. Pronotum and elytron black, with or without metallic luster ..... 2
  - Pronotum and elytron yellow, sometimes with darker stripe along elytral suture, not metallic ..... 4
2. Metafemur unicolorously dark brown, much darker than pro- and mesofemur ..... 3
  - Metafemur bicolorous, mostly yellow, almost as light as pro- and mesofemur, apex with dark brown spot .... *A. marataka*, new species
3. Lateral side of elytron with three ridges. Frontal ridge between antennal sockets as wide as length of antennal callus. Anterofrontal ridge in middle as high as frontal ridge .....
  - ..... *A. malloniae*, new species
  - Lateral side of elytron without ridges. Frontal ridge between antennal sockets much narrower than length of antennal callus. Anterofrontal ridge in middle much lower than frontal ridge ..... *A. glochidionae*, new species
4. Metafemur dark brown, much darker than pro- and mesofemur ..... 5
  - Metafemur yellow, as light or only slightly darker than pro- and mesofemur ..... 6
5. Abdomen dark brown, almost black. All tibiae dark brown. Length 2.26–2.70 mm ....
  - ..... *A. atripes* (Motschulsky)
  - Abdomen yellow. All tibiae yellow. Length 2.96–3.64 mm ..... *A. nigrilabris* Duvivier
6. Lateral side of elytron with three ridges ....
  - ..... *A. nandiensis*, new species
  - Lateral side of elytron without ridges ..... 7
7. Antenna long, reaching beyond basal  $\frac{2}{3}$  of elytra or elytral apex ..... 8
  - Antenna shorter, not reaching beyond basal  $\frac{2}{3}$  of elytra ..... 9
8. Antennomeres 4 to 7 darker than 8 to 11. Supraorbital sulcus absent. Posterolateral callosity of pronotum wide and long. Apical margin of elytron concave. Median lobe of aedeagus with 1 impression near apex of ventral side. Spermatheca with receptacle longer than pump (Fig. 52) ... *A. chrozophorae*, new species
  - Antennomeres 4 to 7 lighter than 8 to 11. Supraorbital sulcus present. Posterolateral callosity of pronotum narrow and short. Apical margin of elytron convex. Median lobe of aedeagus with 2 impressions near apex of ventral side. Spermatheca with receptacle shorter

- than pump (Fig. 48) . . . . .  
 . . . . . *A. macarangae*, new species
9. Head dark brown or black. Elytron darkened along suture . . . . .  
 . . . . . *A. tamila* Konstantinov and Lingafelter
- Head yellow or dark yellow. Elytron light along suture . . . . . 10
10. Median lobe of aedeagus with long appendage apically. Spermathecal duct without coils (Fig. 54) . . . . . *A. kanaraensis* Jacoby
- Median lobe of aedeagus with short denticle apically. Spermathecal duct with coils (Fig. 50) . . . . . *A. phyllanthae*, new species

*Aphthona atripes* (Motschulsky)  
 (Figs. 1, 12, 23, 44, 55, 66)

*Teinodactyla atripes* Motschulsky 1866: 417 (type locality: Sri Lanka. Type is missing from the Motschulsky collection (ZMMU) not examined). Ogloblin 1930: 94 (transferred to *Aphthona*, redescription, figures of male genitalia). Heikertinger and Csiki 1939: 96 (world catalog). Heikertinger 1944: 112/198, 116/202 (key, catalog, taxonomic notes). Scherer 1969: 71, 76 (key, distribution, synonymic bibliography).

*Aphthona nilgiriensis* Jacoby 1903: 103 (type locality: Nilgiri Hills, India. Lectotype (BMNH) designated by Konstantinov and Lingafelter (2002), examined). Maulik 1926: 367, 369 (key, redescription, taxonomic notes, distribution, deposition of type specimens). Ogloblin 1930: 94 (synonymy).

Distribution.—India (Jacoby 1903), Sri Lanka (Motschulsky 1866).

Host plants.—Unknown.

Description.—Pronotum and elytron, except suture, yellow. Facial part of head and basal 3 antennomeres dark yellow. Vertex orange. Labrum, apical 8 antennomeres, scutellum, prosternum, pro- and mesofemora, all tibiae and metatarsi brown or dark brown. Elytral suture brownish. Abdomen dark brown almost black. Meso- and metasterna, and metafemur black. Elytral suture light brown.

Vertex moderately flat, shiny, densely covered with long wrinkles, and fine punctures.

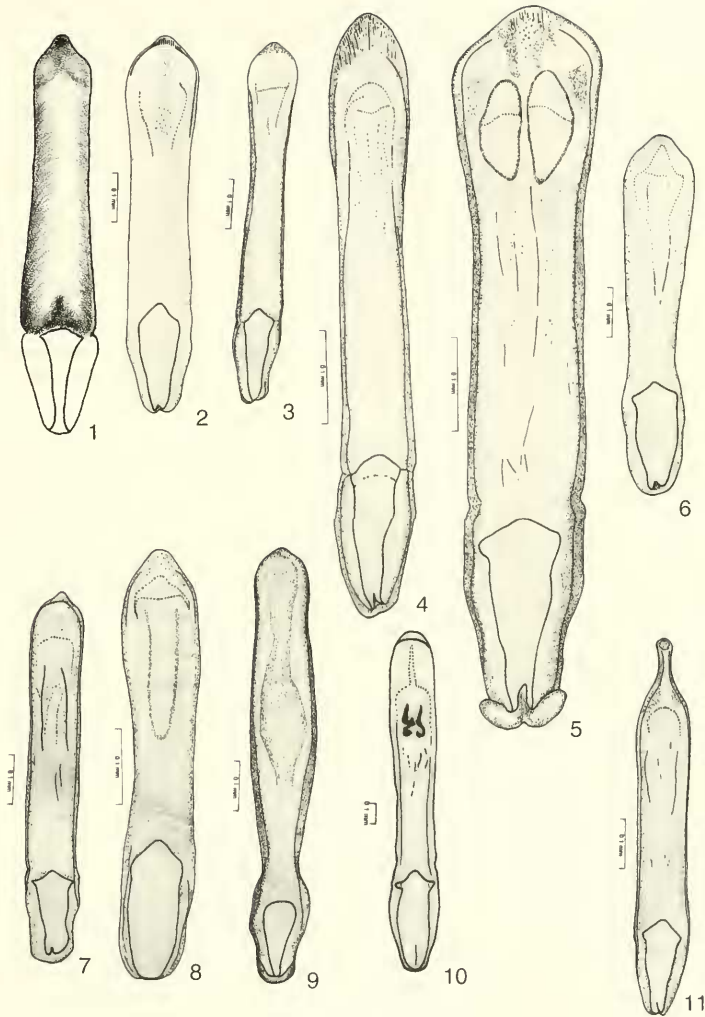
Frontal ridge narrow, short, with sides almost parallel, though maximum width between antennal sockets. Antennal callus moderately flat, trapezoidal, forming obtuse angle to each other. Supracallinal sulcus well developed, slightly curved. Supraorbital sulcus poorly developed. Anterofrontal ridge moderately low in middle, low laterally. Frontoclypeal suture with 2 complete, irregular rows of setae. Clypeus long. Fifth antennomere slightly longer than fourth and sixth, separately. Second antennomere about half as long as fourth.

Pronotum slightly wider basally than apically, with lateral margins nearly straight and almost parallel. Anterolateral callosity moderately low, lower apically than basally, moderately long, concave, forming obtuse denticle at setiferous pore. Pore situated at upper posterior face of callosity. Posterolateral callosity poorly developed. Disc shiny, sparsely covered with tiny, well defined punctures. Interspaces smooth.

Scutellum wider than long, widely rounded at apex. Elytron with well developed humeral callus, without depression posteriorly. Sides convex, maximum width at apical third. Apical margin slightly convex. Apex obtusely angulate. Surface rugose, moderately densely covered with medium size punctures.

Metatibia convex in lateral view, apically slightly widened, dorsally flat at apical fifth; remainder of surface notably convex. First metatarsomere of male slightly narrower basally than apically, apically not wider than third metatarsomere.

Spermatheca with receptacle much longer than pump. Internal side of receptacle convex, external side nearly straight. Receptacle moderately cylindrical, with maximum width near duct. Pump moderately narrow, short, rounded at apex. Horizontal part of pump longer than vertical, much shorter than receptacle. Duct making small loop away from receptacle (Fig. 44). Tignum curved, not widening anteriorly or posteriorly. Posterior sclerotization without arms (Fig. 66). Vaginal palpus with mem-



Figs. 1-11. Median lobe of aedeagus (ventral view) of *Aphthona*. 1, *A. atripes*. 2, *A. maratuka*. 3, *A. mallotae*. 4, *A. nandiensis*. 5, *A. macarangae*. 6, *A. glochidionae*. 7, *A. phyllanthae*. 8, *A. tamila*. 9, *A. chrozophorae*. 10, *A. nigrilabris*. 11, *A. kamanraensis*.

branous part in middle longer than sclerotized part anteriorly and posteriorly. Posterior sclerotization nearly as long as anterior. Lateral margin nearly parallel to medial, forming well developed angle to apex (Fig. 55).

Median lobe of aedeagus slightly convex in lateral view; long, sides nearly parallel. Ventral side convex, only apically flattened. Apex triangular, not bent dorsally. Dorsal opening unusually long (Fig. 23).

Measurements ( $n = 10$ ): Length 2.26–2.70 (2.46), width 1.23–1.43 (1.31), length of pronotum 0.57–0.61 (0.58), width of pronotum 0.77–0.88 (0.81), width across eyes 0.58–0.64 (0.61), distance between eyes 0.36–0.39 (0.37), length of aedeagus 0.87, length of vaginal palpi 0.38, length of receptacle 0.12.

Type material examined.—*Aphthona nilgiriensis*: Lectotype ♀. Labels: 1) Type H.T.; 2) Nilgiri Hills; 3) 922; 4) Jacoby coll. 1909-28a; 5) *Aphthona nilgiriensis* Jac.; 6) Lectotype *Aphthona nilgiriensis* Jacoby des. A. Konstantinov, 1995 (BMNH). Paralectotypes 2 ♀. Labels: 1) Nilgiri Hills; 2) 922; 3) Cotype; 4) *Aphthona nilgiriensis* Jac.; 5) Paralectotype *Aphthona nilgiriensis* Jacoby des. A. Konstantinov, 1995. Paralectotype ♀. Labels: 1) Nilgiri Hills; 2) 922; 3) Type; 4) *Aphthona nilgiriensis* Jac.; 5) Paralectotype *Aphthona nilgiriensis* Jacoby des. A. Konstantinov, 1995 (BMNH).

Material examined.—INDIA: Tamil N. [= Tamil Nadu], Coonoor, 1,700–1,900 m, 29.XI.1978, JAP-IND CO TR (14 TCOJ); Kotagiri, 1700 m, 29.XI.1978, JAP-IND CO TR (15 TCOJ).

Remarks.—*Aphthona atripes* differs from the majority of *Aphthona* species by having the metatibia nearly entirely convex, except for the small flat plate at the apex. Apparently this is the only yellow species with dark pro- and mesotibiae. Some additional characters for distinguishing this species are: meso- and metasterna, abdomen and metafemur black; metatibia and metatarsus dark brown; apex of median lobe tri-

angular, not bent dorsally; dorsal opening of median lobe unusually long.

*Aphthona chrozophorae*  
Prathapan and Konstantinov,  
new species

(Figs. 9, 20, 31, 41, 52, 63, 74)

Distribution.—India (Tamil Nadu, Karnataka).

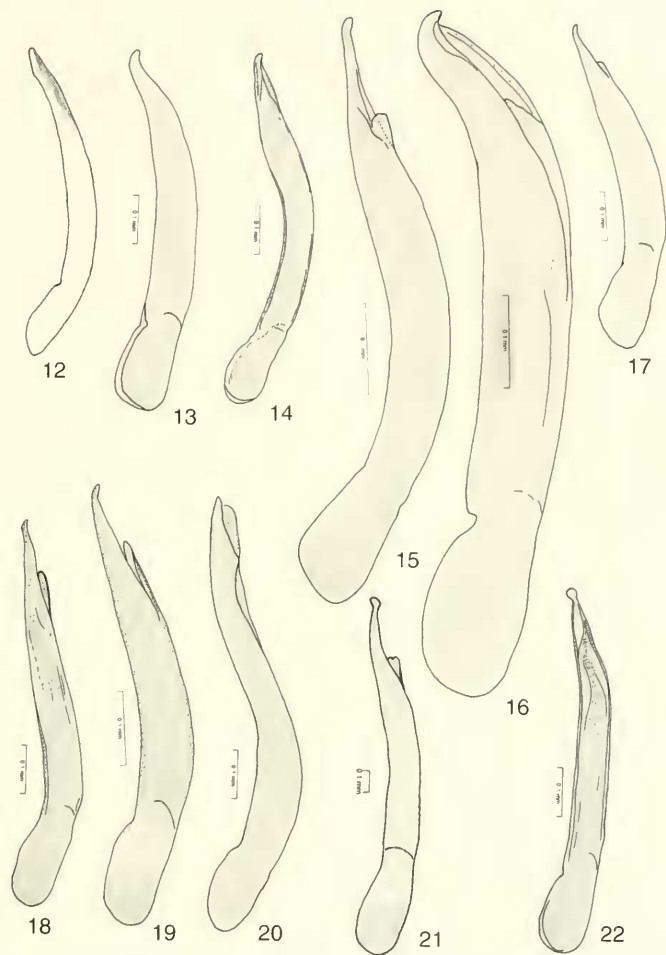
Host plant.—*Chrozophora rotleri* Klotzsch. (Euphorbiaceae).

Description.—Head, labrum, scutellum, suture, apex of metafemur, meso- and metathoracic sterna, and abdomen dark brown to piceous. Antennomeres 4 to 7 light brown. Prothorax, elytron, legs (except for metafemoral apex), antennomeres 1 to 3 and 8 to 11 yellowish.

Vertex impunctate, shiny. All sulci well developed, except for supraorbital. Supracallinal sulcus slightly curved. Antennal calli subquadrate, transverse. Frontal ridge moderately long, broader between antennae, narrower towards anterofrontal ridge. Anterofrontal ridge gently arched, moderately thick, medially slightly lower than frontal ridge. Basal palpomere of maxillary palpus slender, long; second palpomere club shaped, thicker and shorter than first; third palpomere conical, pointed, subequal to second in length. Antenna reaching beyond basal  $\frac{2}{3}$  of elytron but not reaching apex; first antennomere long, club shaped; second thick, shorter; third slender, longer than second; fourth slightly longer than third; fifth much longer than fourth.

Pronotum slightly wider basally than apically, with lateral margins evenly curved. Anterolateral callosity moderately low, apically as low as basally, moderately short, concave, forming obtuse denticle at setiferous pore. Pore situated at upper posterior face of callosity. Posterolateral callosity wide and high, well-developed. Disc shiny, sparsely covered with tiny, well defined punctures. Interspaces smooth.

Scutellum wider than long, widely rounded at apex. Elytron with well developed humeral callus, without depression



Figs. 12-22. Median lobe of aedeagus (lateral view) of *Aphthona*. 12, *A. atripes*. 13, *A. marataka*. 14, *A. mallotae*. 15, *A. nandiensis*. 16, *A. macarangae*. 17, *A. glochidionae*. 18, *A. phyllanthae*. 19, *A. tanila*. 20, *A. chrozophorae*. 21, *A. nigrilabris*. 22, *A. kanawraensis*.

posteriorly. Sides convex, maximum width at apical third. Apical margin slightly concave. Apex obtusely angulate. Surface rugose, moderately densely covered with medium size punctures.

Metatibia nearly straight in lateral view, apically widened, dorsally flat at apical fourth; remainder of surface notably convex. First metatarsomere of female longer than remaining tarsomeres combined, ba-

sally as narrow as apically, apically narrower than third metatarsomere. Metatibial spur longer than half of claw tarsomere.

Spermatheca with receptacle much longer than pump. Internal and external sides of receptacle slightly convex. Receptacle nearly cylindrical, nearly twice longer than wide, with maximum width near middle. Pump moderately narrow, short, rounded at apex. Horizontal part of pump almost as long as vertical, much shorter than receptacle. Duct without coils, making small loop away from receptacle (Fig. 52), points away from receptacle. Tignum nearly straight, not widening posteriorly, slightly widening anteriorly. Posterior sclerotization without arms (Fig. 74). Vaginal palpus with membranous part in middle longer than sclerotized part anteriorly and posteriorly. Posterior sclerotization nearly as long as anterior. Lateral margin not parallel to medial, forming well developed angle to apex (Fig. 63).

Median lobe of aedeagus sinuate in lateral view; distal portion of median lobe slightly curved towards dorsal side, apex bluntly pointed; long, sides sinuate. Ventral side flattened. Apex triangular, not bent dorsally. Dorsal opening longer than broad, covered by a lamina slightly narrower than width of opening but reaches its distal margin (Fig. 31). Arms of tegmen much shorter than stem (Fig. 41).

Measurements ( $n = 10$ ): Length 1.88–2.25 (2.02), width 0.9–1.08 (0.99), length of pronotum 0.48–0.53 (0.50), width of pronotum 0.65–0.75 (0.69), width across eyes 0.51–0.59 (0.55), distance between eyes 0.25–0.30 (0.27), length of aedeagus 0.89, length of vaginal palpi 0.36, length of receptacle 0.11.

Variability.—Antennal color varies as follows: three basal antennomeres invariably yellowish, next four antennomeres brownish, remaining yellowish brown, however in certain specimens antennomeres four to seven are not distinctly darker.

Type material examined.—Holotype ♂. Labels: 1) India: Tamil Nadu: 28.X.1998,

ex. Gudalur Prathapan Coll. 2) Holotype *Aphthona chrozophorae* sp. nov. des. Prathapan & Konstantinov, 2001 (USNM). Paratypes, 3 ♂, 11 ♀. The same labels as holotype (2 BMNH, 5 KPPC, 2 PNCL, 2 UABI, 2 USNM). Paratypes 7 ♂, 5 ♀. Labels: 1) Karnataka: 2.X.1999, ex. Kemmanagundi Prathapan Coll. (12 KPPC).

**Etymology.**—This species is named after the food plant.

**Remarks.**—Superficially *A. chrozophorae* can be confused with *Longitarsus* Latreille, especially because of the relatively long antenna (reaching  $\frac{2}{3}$  of elytron), narrow pronotum and relatively long first metatarsomere. However, we place it in *Aphthona* based on the following characters: sulci surrounding antennal calli well developed; frontal ridge relatively short and convex in lateral view; anterofrontal ridge as low as frontal ridge, lowering laterally. Also, despite the fact that the first metatarsomere is longer than in many other *Aphthona* species, it is less than half the length of the metatibia. *Aphthona chrozophorae* can be easily separated from other Southern Indian *Aphthona* by the median lobe of aedeagus being sinuate in lateral view. It is distantly related to *A. kanaraensis* and *A. nigritabris* and can be separated from these two species by the lack of a knob at the apex of the median lobe of the aedeagus in lateral view and by long antenna reaching  $\frac{2}{3}$  of elytron.

*Aphthona glochidionae*  
**Prathapan and Konstantinov,**  
**new species**

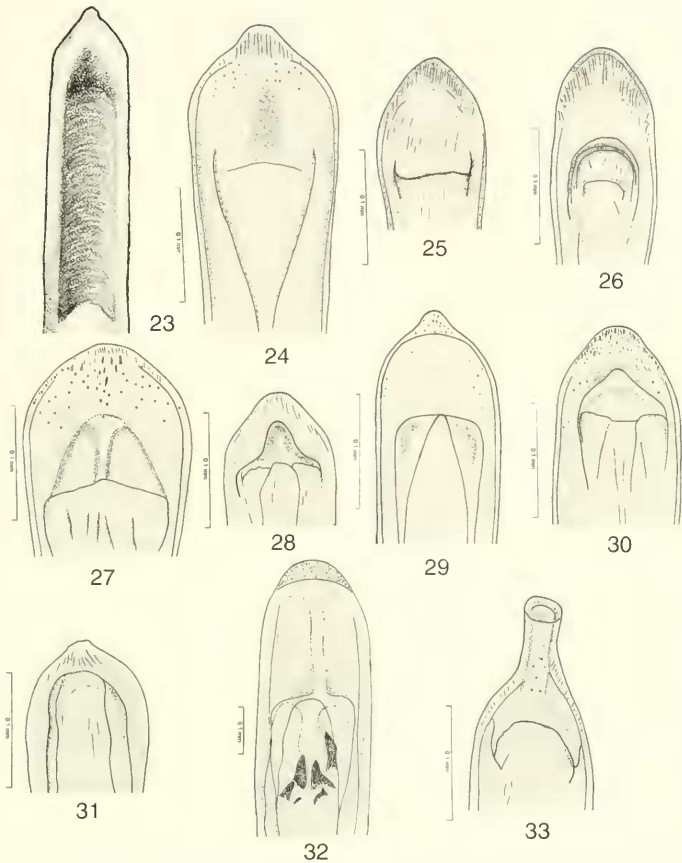
(Figs. 6, 17, 28, 38, 49, 60, 71)

**Distribution.**—India (Karnataka).

**Host plant.**—*Glochidion zeylanicum* A. Juss. (Euphorbiaceae).

**Description.**—Body black, 7 apical antennomeres dark brown or black, metafemur dark brown, bases of pro- and mesofemora light brown. Rest of legs and antenna yellowish.

Vertex impunctate, shiny, with shallow sparse, transverse wrinkles. All sulci well



Figs. 23-33. Median lobe of aedeagus (dorsal view, apical opening) of *Aphthona*. 23, *A. atripes*. 24, *A. marataka*. 25, *A. mullotae*. 26, *A. nandiensis*. 27, *A. macarangae*. 28, *A. glochidiomae*. 29, *A. phyllanthae*. 30, *A. tamila*. 31, *A. chrozophorae*. 32, *A. nigrilabris*. 33, *A. kanarraensis*.

developed, deep. Supracallinal sulcus slightly curved. Antennal calli trapezoid, transverse. Frontal ridge short, narrow, narrowing towards clypeus. Anterofrontal ridge extremely low, lower than frontal ridge. Basal palpomere of maxillary palpus slender, long; second palpomere club shaped, thicker and shorter than first; third palpomere conical, pointed, subequal to or

slightly longer than second. Antenna reaching basal  $\frac{2}{3}$  of elytron; second antennomere thick, shorter than first and slightly shorter than third; fourth nearly as long as third, shorter than fifth; fifth much longer than fourth and sixth antennomeres separately.

Pronotum slightly wider basally than apically, with lateral margins evenly curved. Anterolateral callosity moderately low, api-



cally as low as basally, moderately short, straight, forming obtuse denticle at setiferous pore. Pore situated at upper posterior face of callosity. Posterolateral callosity wide and low, well developed. Disc shiny, sparsely covered with tiny, well defined punctures. Interspaces smooth.

Scutellum wider than long, widely rounded at apex. Elytron with well developed humeral callus, without depression posteriorly. Sides convex, maximum width at apical third. Apical margin slightly convex. Apex obtusely angulate. Surface rugose, densely covered with fine punctures.

Metatibia straight in lateral view, apically widened, dorsally flat at apical third. First metatarsomere of male narrower basally than apically, apically not wider than third metatarsomere.

Spermatheca with receptacle much longer than pump. Internal and external sides of receptacle convex. Receptacle nearly cylindrical, much longer than wide, with maximum width between duct and middle. Pump narrow at vertical part and slightly narrower than base of horizontal part, moderately long, nearly straight, without denticle at apex. Horizontal part of pump longer than vertical. Duct long, almost reaching middle of receptacle, making loop away from receptacle, at base pointed in direction of receptacle (Fig. 49). Tignum nearly straight, not widening anteriorly. Posterior part wide, not forming arms (Fig. 71). Vaginal palpus with membranous part in middle nearly as long as sclerotized part posteriorly and anteriorly. Lateral margin nearly parallel to medial, not forming angle near apex. Medial margin slightly curved (Fig. 60).

Median lobe of aedeagus slightly curved in lateral view, long, sides not parallel. Apex with wide denticle (Fig. 6).

Measurements (n = 10): Length 1.58–2.18 (1.83), width 0.8–1.15 (0.92), length of pronotum 0.36–0.5 (0.41), width of pronotum 0.55–0.71 (0.59), width across eyes 0.43–0.54 (0.47), distance between eyes 0.20–0.28 (0.23), length of aedeagus 0.67,

length of vaginal palpi 0.3, length of receptacle 0.15.

Type material examined.—Holotype ♂. Labels: 1) India, Karnataka Kemmanagundi, 2.X.1999, K. D. Prathapan Coll. 2) Holotype *Aphthona glochidionae* sp. nov. des. Prathapan & Konstantinov, 2001 (USNM). Paratypes 6 ♂, 5 ♀. The same data as holotype (1 BMNH, 7 KPPC, 1 PNCI, 1 UABI, 1 USNM). Paratypes 4 ♂, 5 ♀. Labels: 1) India, Karnataka: Kottigehara, 16.IX.2001, Prathapan, K. D. Coll. (9 KPPC).

Etymology.—This species is named after the adult food plant.

Remarks.—*Aphthona glochidionae* keys out at the same couplet as *A. mallotae* and can be easily separated from it by the following characters: lateral side of elytron without convex ridges; frontal ridge between antennal sockets much narrower than length of antennal callus; anterofrontal ridge in middle much lower than frontal ridge.

*Aphthona kanaraensis* Jacoby  
(Figs. 11, 22, 33, 43, 54, 65, 76)

*Aphthona kanaraensis* Jacoby 1896: 255 (type locality: Kanara, India. Lectotype (BMNH) designated by Konstantinov and Lingafelter (2002), examined). Maulik 1926: 367, 368 (key, redescription, taxonomic notes, distribution, deposition of type specimens). Heikertinger and Csiki 1939: 97 (world catalog). Heikertinger 1944: 112/198, 117/203 (key, catalog, taxonomic notes). Kimoto 1972: 47 (distribution in India). Scherer 1969: 71, 77 (key, distribution, synonymic bibliography). Gruev 1985: 39 (faunistics).

*Aphthona atriventris* Maulik 1926: 367, 368 (type locality: Sanderdhunga Valley, western Almora, India. Lectotype (BMNH) designated by Konstantinov and Lingafelter (2002), examined). Heikertinger and Csiki 1939: 96 (world catalog). Heikertinger 1944: 111/197, 116/202 (key catalog, taxonomic notes). Scherer 1969: 77 (synonymy).

*Aphthona imitatrix* Lopatin 1963: 362 (type locality: Jalalabad, Afghanistan. Holotype and paratype (HNHM), paratype examined). Gruév 1988: 154 (faunistics). Konstantinov and Lingafelter 2002 (synonymy).

Distribution.—India (Assam, Bihar, Maharashtra, Karnataka, Himachal Pradesh, Uttar Pradesh) (Scherer 1969), Nepal (Gruév 1985), Afghanistan (Lopatin 1963), Sri Lanka (Konstantinov and Lingafelter 2002).

Host plants.—*Eucalyptus rostrata* Sch. (Mathur and Balwant Singh 1959a).

Description.—Color yellow. Last 7 antennomeres, labrum, metasternum and metafemoral apices brown. Rest of legs and antenna yellow.

Vertex flat, shiny, covered with fine wrinkles. Frontal ridge narrow with convex surface, short, with sides almost parallel, maximum width at distal margin of antennal sockets. Antennal calli narrowly connected, flat, moderately wide, trapezoidal, forming obtuse angle to each other. Supracallinal sulcus poorly developed, almost straight. Supraorbital sulcus weakly developed. Anterofrontal ridge high especially in middle, moderately high laterally, without denticle in middle. Frontoclypeal suture with two irregular, complete rows of setae. Clypeus long. Eye normally small, narrower than distance between eyes.

Pronotum slightly wider basally than apically, with sides convex, slightly diverging at basal third. Lateral margin moderately explanate, as wide basally as apically. Anterolateral callosity moderately high, long, concave, forming acute denticle at setiferous pore. Pore situated at upper posterior face of callosity. Posterolateral callosity of pronotum longer than lateral margin, lateral margin forming indentation in front of callosity which makes it more prominent. Disc shiny, densely covered with small punctures.

Scutellum wider than long, angulate at apex. Sides nearly straight, converging. Elytron without depression posteriorly. Sides

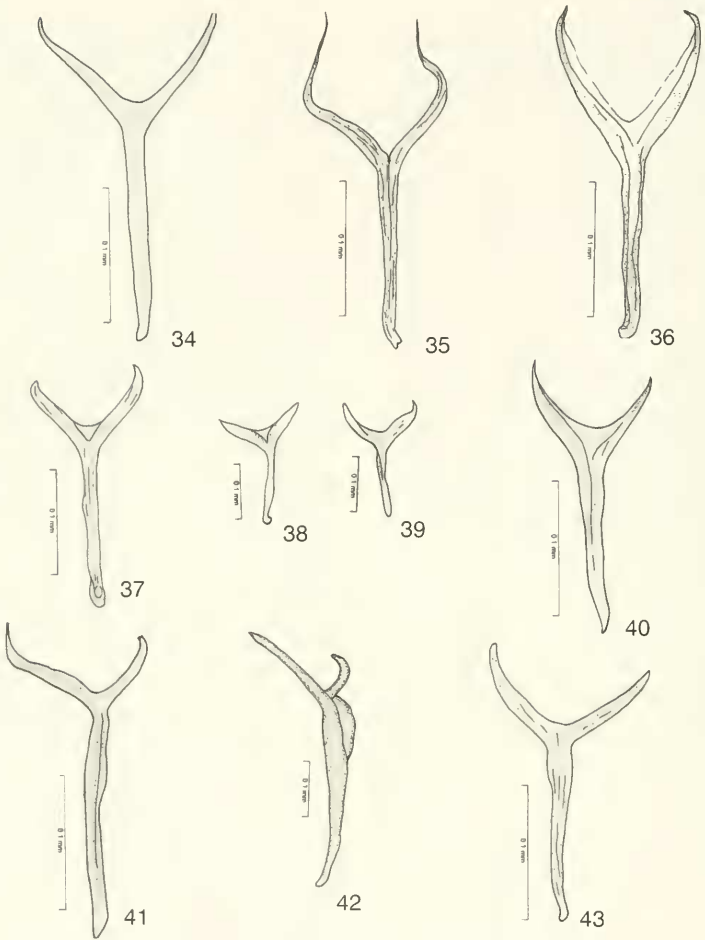
convex, maximum width slightly behind middle. Apical margin convex. Apex obtusely angulate. Surface shiny, covered with moderate sized punctures, their diameter nearly equal to distance between punctures.

Metatibia straight in lateral view, slightly curved from dorsal view, apically widened, dorsally flat at apical half. First metatarsomere of male slightly narrower basally than apically, apically not wider than third metatarsomere. Fourth metatarsomere of male twice as long as third. Claw with large denticle at base and deep invagination in front of it.

Spermatheca with receptacle longer than pump. Internal side of receptacle slightly convex, external side straight. Receptacle nearly cylindrical, much longer than wide, with maximum width close to duct. Pump moderately wide at vertical part and not significantly narrower than base of horizontal part, short, slightly curved, without denticle at apex. Horizontal part of pump much longer than vertical. Duct moderately short, almost reaching middle of receptacle, not making loop away from receptacle, at base pointed in direction of receptacle (Fig. 54). Tignum slightly curved, abruptly widening anteriorly. Posterior sclerotization forming two moderately wide arms with acute angle to each other, posterior sclerotization of arms weak (Fig. 76). Vaginal palpus with membranous part in middle nearly as long as sclerotized part posteriorly and anteriorly. Posterior sclerotization wider than and as long as anterior. Apical sclerotization laterally shorter than medially, straight. Apical membrane oblique. Lateral margin not parallel to medial, not forming angle near apex. Medial margin slightly curved (Fig. 65).

Median lobe of aedeagus slightly curved in lateral view, thin, sides slightly concave in middle. Apex produced into long appendage with small button-shaped structure on top (Fig. 11).

Measurements ( $n = 10$ ): Length 1.80–2.15 (2.02); width 0.98–1.2 (1.09); length of pronotum 0.45–0.56 (0.50); width of pronotum 0.68–0.83 (0.73); width across



Figs. 34–43. Tegmen of *Aphthona*. 34, *A. marataka*. 35, *A. mallotae*. 36, *A. nandiensis*. 37, *A. macarangae*. 38, *A. glochidionae*. 39, *A. phyllanthae*. 40, *A. tamila*. 41, *A. chrozophorae*. 42, *A. nigrilabris*. 43, *A. kamaraensis*.

eyes 0.49–0.60 (0.54); distance between eyes 0.23–0.29 (0.26); length of aedeagus 0.78; length of vaginal palpi 0.36; length of receptacle 0.13.

Type material examined.—*Aphthona*

*kamaraensis*: Lectotype ♂. Labels: 1) Kamara; 2) Andrewes Bequest. B.M. 1922–21. 3) Lectotype *Aphthona kamaraensis* Jacoby des A. Konstantinov, 1995 (BMNH). Paralectotypes 6 ♂ and ♀, with same labels as

lectotype (BMNH). Paralectotype 1 specimen. Labels: 1) Kanara; 2) Type; 3) Andrewes Bequest. B.M. 1922-21. 4) *Aphthona kanaraensis* Jac. type; 5) Paralectotype *Aphthona kanaraensis* Jacoby des A. Konstantinov, 1995 (BMNH). Paralectotypes 3 specimens. Labels: 1) Kanara; 2) 1st Jacoby Coll.; 3) Paralectotype *Aphthona kanaraensis* Jacoby des A. Konstantinov, 1995 (MCZC).

*Aphthona atriventris*: Lectotype ♂. Labels: 1) Type; 2) Sanderdhunga V. 8-12,000 ft. W. Almora H.G.C.; 3) *Aphthona atriventris* M. Maulik det. type 1925; 4) Lectotype *Aphthona atriventris* Maulik des. A. Konstantinov, 1995 (BMNH). Paralectotypes 5 specimens, with same labels as lectotype (BMNH).

*Aphthona imitatrix*: Paratypes, 1 ♂, 2 ♀. Labels: 1) O. Afghan, 1963; 2) Kunartal, 500 m, Jalalabad, 30.III; 3) *Aphthona imitatrix* sp. n. I. Lopatin det., 1962 (3 HHNM).

Material examined.—INDIA: Karnataka: 2 ♂, 12.VIII.1998; 2 ♂, 18.VIII.1998; 2 ♂, 14.IX.1998; 4 ♂, 8 ♀, 20.IX.1998; 1 ♂, 1 ♀, Bangalore, 30.IX.1998. K. D. Prathapan coll. (38 KPPC, 2 USNM). SRI LANKA: Kur. Dist. Kurungala, 3.XI.1966, leg. J. F. G. Clarke & T. M. Clarke (1 USNM).

Remarks.—*Aphthona kanaraensis* can be separated from other species of *Aphthona* by the median lobe of the aedeagus with the apex produced into a long appendage with a small button-shaped callosity on top and tignum with two moderately wide arms forming an acute angle with each other. The spermatheca of this species is quite variable, however this variability is based on the function of the spermatheca as a sperm depository. When the spermatheca is empty, its receptacle is quite narrow with concave sides. When the receptacle is full, its sides are convex.

Maulik (1926) stated that the elytra of *A. kanaraensis* at the base are not wider than the pronotum and that there is no spur at the apex of the metatibia, but both of these observations are incorrect.

*Aphthona macarangae*  
**Prathapan and Konstantinov,**  
**new species**

(Figs. 5, 16, 27, 37, 48, 59, 70)

Distribution.—India (Tamil Nadu, Kerala).

Host plant.—*Macaranga peltata* Muell. (Euphorbiaceae).

Description.—Color yellowish, head and 5 apical antennomeres dark yellow. Metasternum and abdomen light piccous.

Vertex impunctate, granulate. Sulci well developed. Supracallinal sulcus narrow and not deep, slightly curved. Antennal calli subquadrate, transverse. Frontal ridge moderately long, between antennae as wide as above anterofrontal ridge. Anterofrontal ridge gently arched, moderately thick, medially with denticle, slightly lower than frontal ridge. Basal palpomere of maxillary palpus slender, long; second palpomere thickened. Third palpomere pointed, slightly longer than second. Antennae reaching to apex of elytra; second antennomere shorter than third; fourth equal to or slightly longer than third; fifth longer than fourth; distal antennomeres not distinctly thickened.

Pronotum slightly wider basally than apically, with lateral margins evenly curved. Anterolateral callosity moderately low, apically as low as basally, moderately short, concave, forming obtuse denticle at setiferous pore. Pore situated at upper posterior face of callosity. Posterolateral callosity narrow and short, poorly developed. Disc shiny, sparsely covered with wrinkles and tiny, poorly defined punctures.

Scutellum wider than long, widely rounded at apex. Elytron with well developed humeral callus, without depression posteriorly. Sides convex, maximum width at apical third. Apical margin slightly convex. Apex obtusely angulate. Surface rugose, moderately densely covered with large size punctures.

Metatibia curved in lateral view, apically widened, dorsally flat at apical half; re-

mainder of surface notably convex. First metatarsomere of female longer than remaining tarsomeres combined, basally as narrow as apically, apically narrower than third metatarsomere. Metatibial spur longer than half of claw tarsomere.

Spermatheca with receptacle slightly shorter than pump. Internal side of receptacle more convex than external. Receptacle ovoid, only slightly longer than wide, with maximum width below middle. Pump moderately narrow, long, with denticle at apex. Horizontal part of pump longer than vertical. Duct without coils making no loop away from receptacle (Fig. 48), points in same direction as receptacle. Tignum nearly straight, widening posteriorly and anteriorly. Posterior sclerotization with two well-developed, long arms (Fig. 70). Vaginal palpus with membranous part in middle longer than sclerotized part anteriorly and posteriorly. Posterior sclerotization slightly longer than or as long as anterior. Lateral margin not parallel to medial, forming well developed angle to apex (Fig. 59).

Median lobe of aedeagus curved in lateral view; distal portion strongly curved ventrally. Ventral side flattened with two impressions. Apex triangular, bent dorsally. Dorsal opening wider than long, partially covered by transparent lamina (Fig. 27). Arms of tegmen much shorter than stem (Fig. 37).

Measurements ( $n = 10$ ): Length 1.76–2.2 (2.02), width 0.88–1.19 (1.03), length of pronotum 0.43–0.53 (0.49), width of pronotum: 0.58–0.73 (0.65), width across eyes 0.43–0.56 (0.54), distance between eyes 0.23–0.27 (0.25), aedeagus length 0.77, length of receptacle 0.7, length of vaginal palpi 0.35.

Type material examined.—Holotype, ♂. Labels: 1) India: Tamil Nadu: Coonoor, 27.X. 1998, K. D. Prathapan Coll.; 2) Holotype *Aphthona macarangae* sp. nov. des. Prathapan & Konstantinov, 2001 (USNM). Paratypes, 32 ♂, 14 ♀ with same labels as holotype (2 BMNH, 38 KPPC, 2 PNCI, 2 UABI, 2 USNM); 1 ♂, 1 ♀. Kerala, Vel-

lanikkara, 12.VI.1999 (K. D. Prathapan) (2 KPPC).

**Etymology.**—This species is named after its host plant.

**Variability.**—Specimens collected from lower elevations are considerably smaller.

**Remarks.**—*Aphthona macarangae* resembles *A. chrozophorae* in several features including relatively long antennae and first metatarsomere, but can be readily distinguished by a number of characters: antennomeres 4 to 7 lighter than 8 to 11; supra-orbital sulcus present; posterolateral callosity of pronotum narrow and short; apical margin of elytron convex; median lobe of aedeagus with 2 impressions near apex of ventral side; spermatheca with receptacle shorter than pump.

*Aphthona mallotae*  
Prathapan and Konstantinov,  
new species

(Figs. 3, 14, 25, 35, 46, 57, 68)

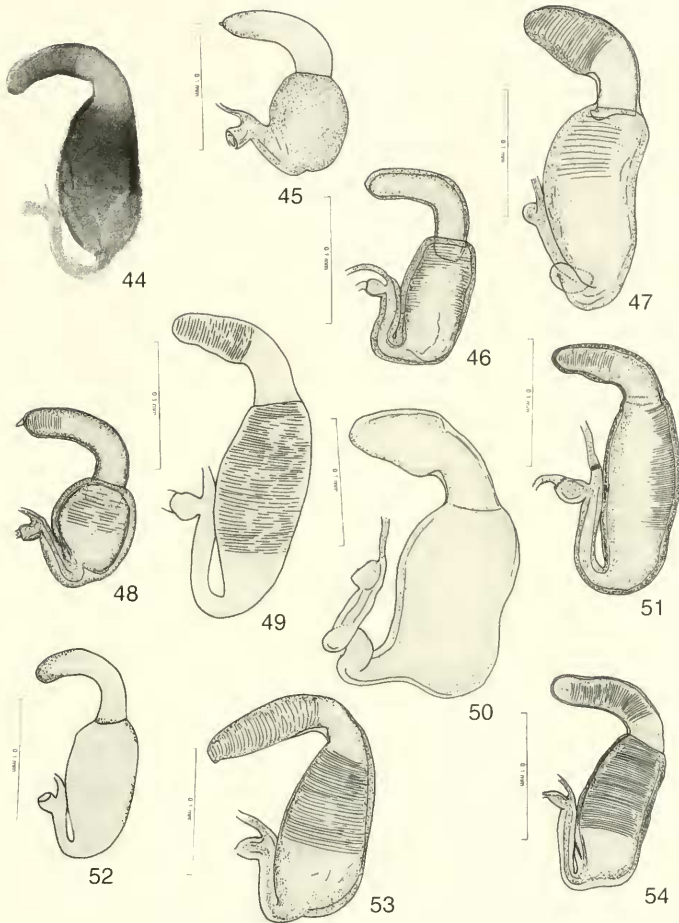
**Distribution.**—India (Karnataka).

**Host plant.**—*Mallotus philippinensis* Muell. (Euphorbiaceae).

**Description.**—Body with metallic green luster. Six apical antennomeres and metafemur brownish. Rest of antenna and legs yellow.

Vertex impunctate, rugose above antennal calli, covered with shallow transverse wrinkles. Sulci well developed. Supracallicular sulcus narrow and not deep, curved. Antennal calli subquadrate, transverse. Frontal ridge moderately long, between antennae wider than above anterofrontal ridge. Anterofrontal ridge gently arched, moderately thick, medially without denticle, as high as frontal ridge. Basal palpomere of maxillary palpus slender, long; second palpomere thickened; third palpomere much narrower than second, pointed. Antenna not reaching basal  $\frac{2}{3}$  of elytra; second antennomere longer than third; fourth equal to second, longer than third; fifth longer than fourth; distal antennomeres not distinctly thickened.

Pronotum slightly wider basally than api-



Figs. 44–54. Spermatheca of *Aphthona*. 44, *A. atripes*. 45, *A. marataka*. 46, *A. mallotae*. 47, *A. nandiensis*. 48, *A. macarangae*. 49, *A. glochidionae*. 50, *A. phyllanthae*. 51, *A. tamila*. 52, *A. chrozophorae*. 53, *A. nigri-labris*. 54, *A. kananraensis*.

cally, with lateral margins evenly curved. Anterolateral callosity moderately low, apically slightly lower than basally, moderately short, straight, forming obtuse denticle at setiferous pore. Pore situated at upper posterior face of callosity. Posterolateral cal-

losity moderately narrow and long, well-developed. Disc shiny, sparsely covered with small, well defined punctures.

Scutellum wider than long, rounded at apex. Elytron with well developed humeral callus, without depression posteriorly. Sides

convex, with three convex ridges, maximum width at apical third. Apical margin slightly convex. Apex obtusely angulate. Surface rugose, moderately densely covered with large punctures.

Metatibia slightly curved in lateral view, apically widened, dorsally flat at apical third; remainder of surface convex. First metatarsomere of male longer than remaining tarsomeres combined, basally as narrow as apically, apically narrower than third metatarsomere. Metatibial spur straight, longer than half of claw tarsomere.

Spermatheca with receptacle longer than pump. Internal side of receptacle more convex than external. Receptacle nearly cylindrical, much longer than wide, with maximum width near middle. Pump moderately narrow, long, without denticle at apex. Horizontal part of pump longer than vertical. Duct without coils, making no loop away from receptacle (Fig. 46), points away from receptacle. Tignum nearly straight, widening posteriorly and anteriorly. Posterior sclerotization without arms, but with two areas of sclerotization (Fig. 68). Vaginal palpus with membranous part in middle longer than sclerotized part anteriorly and posteriorly. Posterior sclerotization slightly longer than or as long as anterior. Lateral margin not parallel to medial, forming well developed angle to apex (Fig. 57).

Median lobe of aedeagus curved in lateral view; distal portion of median lobe curved ventrally. Ventral side with single sharp ridge before apex and two elongated furrows lateral to it. Apex triangular, bent dorsally. Dorsal opening not covered by lamina (Fig. 25). Arms of tegmen much shorter than stem (Fig. 35).

Measurements ( $n = 10$ ): Length 1.45–1.85 (1.65), width 0.75–1.03 (0.88), length of pronotum 0.36–0.45 (0.41), width of pronotum 0.55–0.68 (0.6), width across eyes 0.40–0.55 (0.48), distance between eyes 0.21–0.27 (0.24), length of aedeagus 0.69, length of vaginal palpi 0.31, length of receptacle 0.10.

Type material examined.—Holotype ♂:

Labels: 1) India: Karnataka: Nandi Hills, 19.IV.1999, K. D. Prathapan Coll. 2) Holotype *Aphthona mallotae* sp. nov. des. Prathapan & Konstantinov 2001 (USNM). Paratypes, 12 ♂, 15 ♀ with same labels as holotype (2 BMNH, 29 KPPC, 2 PNCl, 2 UAB1, 2 USNM); 2 ♂, 1 ♀, Nandi Hills, 17.X.1998 K. D. Prathapan Coll. (3 KPPC)

**Etymology.**—This species is named after its host plant.

**Remarks.**—*Aphthona mallotae* is similar to *A. marataka*. Based in color and proportions of the body. However, these species are easily distinguishable from each other based on the following characters: metafemur unicolorously dark (in *A. marataka* it is bicolorous with the base being bright yellow and apex being dark brown); median lobe of aedeagus slender with sharp ridge ventrally (in *A. marataka* the lobe is much more robust without a ridge).

*Aphthona marataka*  
Prathapan and Konstantinov,  
new species

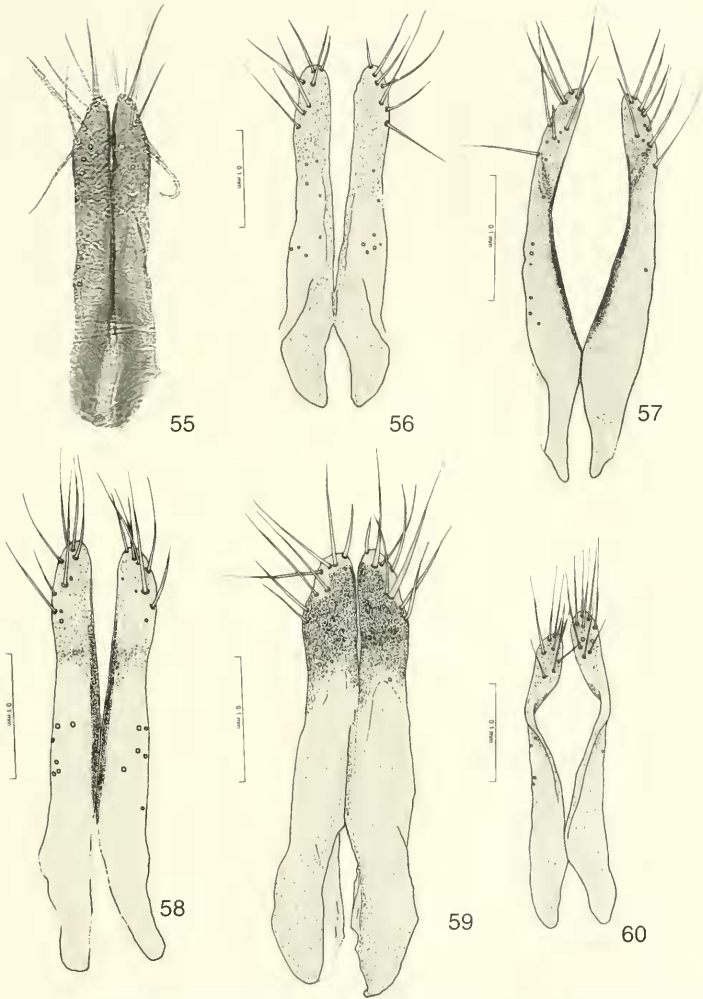
(Figs. 2, 13, 24, 34, 45, 56, 67)

**Distribution.**—India (Karnataka).

**Host plant.**—Unknown.

**Description.**—Body with metallic green luster. Seven apical antennomeres and apex of metafemur brownish. Rest of antenna and legs yellow.

Vertex impunctate, strongly rugose above antennal calli, covered with transverse wrinkles. Sulci well developed. Supracalinal sulcus as wide and deep as other, curved. Antennal calli subquadrate, transverse. Frontal ridge moderately long, between antennae wider than above anterofrontal ridge. Anterofrontal ridge gently arched, moderately thick, medially without denticle, as high as frontal ridge. Basal palpomere of maxillary palpus longer than second; second thickened, subequal to third in length; third palpomere much narrower than second, pointed. Antenna extend beyond basal  $\frac{2}{3}$  of elytron; second antennomere shorter than third, third to fifth progressively increase in size.



Figs. 55-60. Vaginal palpi of *Aphthona*. 55, *A. atripes*. 56, *A. marataka*. 57, *A. mallotae*. 58, *A. nandiensis*. 59, *A. macarangae*. 60, *A. glochidionae*.



Pronotum slightly wider basally than apically, with lateral margins evenly curved. Anterolateral callosity moderately low, apically slightly lower than basally, moderately short, straight, forming obtuse denticle at setiferous pore. Pore situated at upper posterior face of callosity. Posterolateral callosity moderately narrow and long, well-developed. Disc shiny, densely covered with relatively large, elongate, well defined punctures, forming longitudinal wrinkles.

Scutellum wider than long, rounded at apex. Elytron with well developed humeral callus, without depression posteriorly. Sides convex, without convex ridges, maximum width at apical third. Apical margin slightly convex. Apex obtusely angulate. Surface rugose, moderately densely covered with large punctures.

Metatibia slightly curved in lateral view, apically widened, dorsally flat at apical third; remainder of surface convex. First metatarsomere of female longer than remaining tarsomeres combined, basally as narrow as apically, apically slightly narrower than third metatarsomere. Metatibial spur curved, longer than half of claw tarsomere.

Spermatheca with receptacle slightly shorter than pump. Internal side of receptacle more convex than external. Receptacle ovoid, only slightly longer than wide, with maximum width below middle. Pump moderately narrow, long, with denticle at apex. Horizontal part of pump longer than vertical. Duct without coils making no loop away from receptacle (Fig. 45), points in same direction as receptacle. Tignum nearly straight, widening posteriorly and anteriorly. Posterior sclerotization with two arms (Fig. 67). Vaginal palpus with membranous part in middle longer than sclerotized part anteriorly and posteriorly. Posterior sclerotization slightly longer than or as long as anterior. Lateral margin not parallel to medial, forming well developed angle to apex (Fig. 56).

Median lobe of aedeagus curved in lateral view; distal portion curved ventrally. Ventral side without ridge before apex, with

elongate shallow furrow in middle. Apex wide, triangular, bent dorsally. Dorsal opening not covered by lamina (Fig. 24). Arms of tegmen much shorter than stem (Fig. 34).

Measurements ( $n = 4$ , all females): Length 2.18–2.28 (2.21), width 1.06–1.18 (0.12), length of pronotum 0.48–0.53 (0.5), width of pronotum 0.71–0.78 (0.75), width across eyes 0.54–0.60 (0.57), distance between eyes 0.25–3.0 (0.28), length of aedeagus 0.65, length of vaginal palpi 0.3, length of receptacle 0.14.

Type material examined.—Holotype, ♂. Labels: 1) India Karnataka: Kattledadu, 16.XI.1998 K. D. Prathapan Coll. 2) Holotype *Aphthona marataka* sp. nov. des. Prathapan & Konstantinov, 2001 (USNM). Paratypes, 7 ♀. with same labels as holotype (1 BMNH, 3 KPPC, 1 PNCI, 1 UABI, 1 USNM).

Etymology.—The species name "marataka" means emerald in Sanskrit and refers to the color of the insect.

Remarks.—*Aphthona marataka* is similar to *A. mallotae* in color and proportions of the body. However, these species are easily distinguishable based on the following characters: metafemur bicolorous with base bright yellow and apex dark brown (in *A. mallotae* it is unicolorously dark); median lobe of aedeagus robust without a ridge on ventral side (in *A. mallotae* the lobe is much more slender with sharp ridge ventrally).

*Aphthona nandiensis*  
Prathapan and Konstantinov,  
new species

(Figs. 4, 15, 26, 36, 47, 58, 69)

Distribution.—India (Karnataka).

Host plant.—Unknown.

Description.—Body entirely yellowish except darker 4 or 5 last antennomeres and ventral side of body.

Vertex impunctate, finely rugose above antennal calli, covered with fine transverse wrinkles. Sulci relatively well developed, but not deep. Antennal calli subquadrate, transverse. Frontal ridge moderately short, broad, between antennae slightly wider than

above anterofrontal ridge. Anterofrontal ridge gently arched, moderately thick, medially without denticle, as high as frontal ridge. Basal palpomere of maxillary palpus longer than second; second thickened, shorter than third; third palpomere much narrower than second, pointed. Antennae reach apex of elytra; second antennomere thicker but nearly as long as third, third shorter than fourth and fifth.

Pronotum slightly wider basally than apically, with lateral margins evenly curved. Anterolateral callosity moderately low, apically slightly lower than basally, moderately short, straight, forming obtuse denticle at setiferous pore. Pore situated at upper posterior face of callosity. Posterolateral callosity moderately narrow and long, well-developed. Disc shiny, sparsely covered with medium size, elongate, ill defined punctures, forming longitudinal wrinkles.

Scutellum wider than long, narrowly rounded at apex. Elytron with well developed humeral callus, without depression posteriorly. Sides weakly convex, with three convex ridges, maximum width nearly in middle. Apical margin convex. Apex broadly rounded. Surface rugose, densely covered with large punctures forming striae laterally.

Metatibia nearly straight in lateral view, apically widened, dorsally flat at apical third; remainder of surface convex. First metatarsomere of male longer than remaining tarsomeres combined, basally as narrow as apically, apically slightly narrower than third metatarsomere. Metatibial spur curved, longer than half of claw tarsomere.

Spermatheca with receptacle longer than pump. Internal side of receptacle convex, external side concave. Receptacle elongate, longer than wide, with maximum width nearly in middle. Pump moderately wide, short, without denticle at apex. Horizontal part of pump short, longer than vertical. Duct with coils making no loop away from receptacle (Fig. 47), points in same direction as receptacle. Tignum curved anteriorly, widening posteriorly and anteriorly.

Posterior sclerotization without arms (Fig. 69). Vaginal palpus with membranous part in middle longer than sclerotized part anteriorly and posteriorly. Posterior sclerotization slightly longer than or as long as anterior. Lateral margin not parallel to medial, forming well developed angle to apex (Fig. 58).

Median lobe of aedeagus curved in lateral view; distal portion curved ventrally. Ventral side weakly convex, without ridge before apex. Apex wide, triangular, bent dorsally, without denticle. Dorsal opening not covered by lamina (Fig. 26). Arms of tegmen shorter than stem (Fig. 36).

Measurements ( $n = 1$ , male): Length 1.21, width 0.68, length of pronotum 0.29, width of pronotum 0.45, width across eyes 0.24, distance between eyes 0.18, length of aedeagus 0.65, length of vaginal palpi 0.3, length of receptacle 0.14.

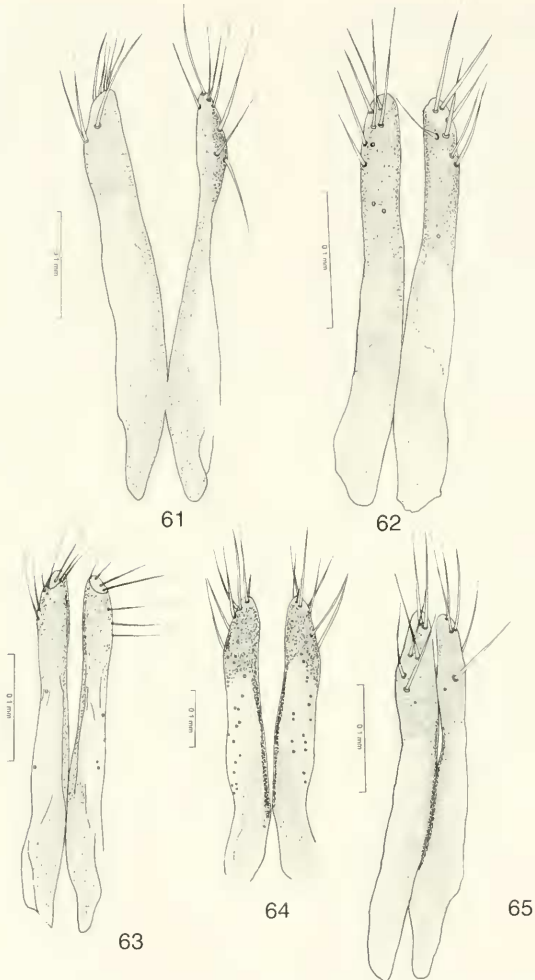
Type material examined.—Holotype  $\delta$ . Labels: 1) India: Karnataka: Nandi Hills, 19. IV. 1999 K. D. Prathapan Coll. 2) Holotype *Aphthona nandiensis* sp. nov. des. Prathapan & Konstantinov, 2001 (USNM). Paratypes 2  $\delta$ , 1  $\text{♀}$ . The same labels as holotype (2 KPPC, 1 USNM).

**Etymology.**—This species is named after the type locality.

**Remarks.**—*Aphthona nandiensis* is the smallest Southern Indian species of *Aphthona*. It can be easily separated from all other yellow species by the three ridges on the sides of each elytron and unique median lobe of the aedeagus and spermatheca.

*Aphthona nigrilabris* Duvivier  
(Figs. 10, 21, 32, 42, 53, 64, 75)

*Aphthona nigrilabris* Duvivier 1892: 426 (type locality: Konbir, Bengal, India. Lectotype (ISNB) designated by Konstantinov and Lingafelter (2002), examined). Chen 1934: 370 (key, faunistics). Maulik 1926: 367, 370 (key, redescription, taxonomic notes, distribution, deposition of type specimens). Heikertinger and Csiki 1939: 97 (world catalog). Hei-



Figs. 61–65. Vaginal palpi of *Aphthona*. 61, *A. phyllanthae*. 62, *A. tanula*. 63, *A. chrozophorae*. 64, *A. nigrilabris*. 65, *A. kananraensis*.

kertinger 1944: 111/197, 113/199, 117/203, (key, catalog, taxonomic notes), 1945–1950: 144/130 (key). Gressitt and Kimoto 1963: 866 (key). Scherer 1969:

71, 76 (key, distribution, synonymic bibliography). Takizawa 1983: 75 (list, India), 1988: 9 (list, Nepal). Medvedev and Sprecher-Uebersax 1999: 323 (list, Ne-

pal). Kimoto, 2000: 198, 201 (key, distribution); 2001: 54 (distribution, Nepal). *Longitarsus recticollis* Jacoby 1898: 188 (type locality: Calcutta, India. Depository of type specimens is unknown). Heikertinger and Csiki 1939: 97 (synonymy). *Aphthona rubida* Chen 1936: 83 (type locality: Bandarawella, Sri Lanka. Deposition of the type specimen is unknown). Konstantinov and Lingafelter 2002 (synonymy).

Distribution.—India (Assam, Bengal, Bihar, Karnataka, Maharashtra, Uthar Pradesh), Bangladesh (Duvivier 1892; Jacoby 1898), Nepal (Medvedev and Sprecher-Uebersax 1999), Sri Lanka, Thailand, Vietnam, Indonesia (Kimoto 2001).

Host plants.—*Euphorbia hirta* L., *E. hypericifolia* L. (Zuka-ur-Rab 1991); *E. pilulifera* (Euphorbiaceae) (Scherer 1969); *Pinus longifolia* Roxb. (Pinaceae) (Mathur and Balwant Singh 1959b). *Ipomoea batatas* Poir. (Convolvulaceae).

Description.—Color greyish yellow. Last 6 antennomeres, labrum, apical part of clypeus, scutellum, meso- and metasterna and metafemur brown. Rest of legs and antenna yellow.

Vertex flat, shiny, densely covered with long wrinkles, and fine punctures. Frontal ridge wide, short, with sides almost parallel, maximum width near anterofrontal ridge. Antennal calli moderately flat, very short, much shorter than wide, moderately wide, trapezoidal, forming obtuse angle to each other. Supracallinal sulcus poorly developed, straight. Supraorbital sulcus poorly developed. Anterofrontal ridge moderately high in middle, low laterally. Frontoclypeal suture with two irregular, complete rows of setae. Clypeus long. Fifth antennomere longer than fourth and sixth separately.

Pronotum slightly wider basally than apically, with lateral margins nearly straight and almost parallel. Anterolateral callosity moderately low, apically lower than basally, long, concave, forming acute denticle at setiferous pore. Pore situated at upper poste-

rior face of callosity. Posterolateral callosity poorly developed. Disc shiny, sparsely covered with tiny punctures. Interspaces finely rugose.

Scutellum wider than long, widely rounded at apex. Elytron with well developed humeral callus, without depression posteriorly. Sides convex, maximum width at apical third. Apical margin slightly convex. Apex obtusely angulate. Surface rugose, densely covered with fine punctures. Prosternum short. Intercostal prosternal process wider apically, curved at apex. Metasternum moderately long, convex in lateral view.

Metatibia slightly convex in lateral view, apically widened, dorsally flat at apical third. First metatarsomere of female slightly narrower basally than apically, apically not wider than third metatarsomere.

Spermatheca with receptacle nearly as long as pump. Internal side of receptacle convex, external slightly concave. Receptacle nearly cylindrical, longer than wide, with maximum width between duct and middle. Pump narrow at vertical part and slightly narrower than base of horizontal part, moderately long, nearly straight, without denticle at apex. Horizontal part of pump longer than vertical. Duct short, not reaching middle of receptacle, not making loop away from receptacle, at base pointed in direction opposite of receptacle (Fig. 53). Tignum slightly curved, gradually widening anteriorly. Posterior part poorly sclerotized, not forming arms (Fig. 75). Vaginal palpus with membranous part in middle longer than sclerotized part posteriorly and as long as sclerotized part anteriorly. Posterior sclerotization slightly narrower than anterior. Apical sclerotization laterally nearly as long as medially, straight. Apical membrane nearly round. Lateral margin nearly parallel to medial, not forming angle near apex. Medial margin slightly curved (Fig. 64).

Median lobe of aedeagus sinuous in lateral view, very long, sides parallel. Ventral side convex, only apically with wide, shal-

low longitudinal impression. Apex with small button shaped structure (Fig. 21).

Measurements (n = 10): Length 2.96–3.64 (3.27), width 1.58–1.96 (1.77), length of pronotum 0.7–0.84 (0.78), width of pronotum 1.0–1.26 (1.14), width across eyes 0.74–0.88 (0.81), distance between eyes 0.35–0.43 (0.39), aedeagus length 0.71, vaginal palpi 0.49, receptacle 0.2.

Type material examined.—*Aphthona nigrilabris*: Lectotype ♂. Labels: 1) Coll. R.I.Sc.N.B. Inde Konbir P. Cardon; 2) Collecteur Duvivier; 3) Type; 4) det Duvivier *Aphthona nigrilabris* n.sp.; 5) Lectotype *Aphthona nigrilabris* Duvivier des. A. Konstantinov (ISNB). Paralectotypes 2 ♀, with same labels as lectotype (ISNB).

Material examined.—INDIA: Karnataka, Bangalore, 22.IV.1998, *Ipomaea batatas* Poir., K. D. Prathapan Coll. (19 KPPC); 3 ♂, 7 ♀, Bangalore, 27.IV.1998, K. D. Prathapan Coll. (8 KPPC, 2 USNM); Delhi, New Delhi, 20–23.X.1978, Jap-ind co tr (17 TCOJ); Tamil N. [= Tamil Nadu] Madras, 16–19.XII.1978, Jap-ind co tr (16 TCOJ). NEPAL: 2 km E. Mugling, 27°48.36'N, 84°53.68'E, 20.IV.2000, leg. Konstantinov, Lingafelter, Volkovitsh (5 USNM); Terrai, W. Narayangadh, small valley Rapti river 26.IV.2000, 27°42.31'N, 84°21.11'E, leg. Konstantinov, Lingafelter, Volkovitsh (2 USNM); Terrai, env. Chitawan Nat. Park, river beds 25.IV.2000 27°28.79'N, 84°52.54'E, leg. Konstantinov, Lingafelter, Volkovitsh (1 USNM); Narayani env. of Narayangadh, pasture 24.IV.2000, leg. Konstantinov, Lingafelter, Volkovitsh (2 USNM). SRI LANKA: Candy, 1,800 ft., 7–14.I.1970, leg. Davis & Rowe (1 USNM). THAILAND: 13–15.IV.1991, Thong Pha Phum 150 m, 14°43'N, 98°39'E. Vit Kuban leg. (4 NHMB); Thailand occ. 08–12.IV.1991, Sangkhlaburi, Jan Farkač leg. (2 NHMB, 1 USNM).

Remarks.—*Aphthona nigrilabris* belongs to the *cyparissiae* group of species. In *A. nigrilabris* the apex of the median lobe of the aedeagus has a wide depression ven-

trally and the eighth abdominal sternite of the female is heavily sclerotized.

*Aphthona phyllanthae*  
Prathapan and Konstantinov,  
new species

(Figs. 17, 18, 29, 39, 50, 61, 72)

Distribution.—India (Karnataka).

Host plants.—*Phyllanthus polyphyllus* Wild. and *P. emblica* L. (Euphorbiaceae).

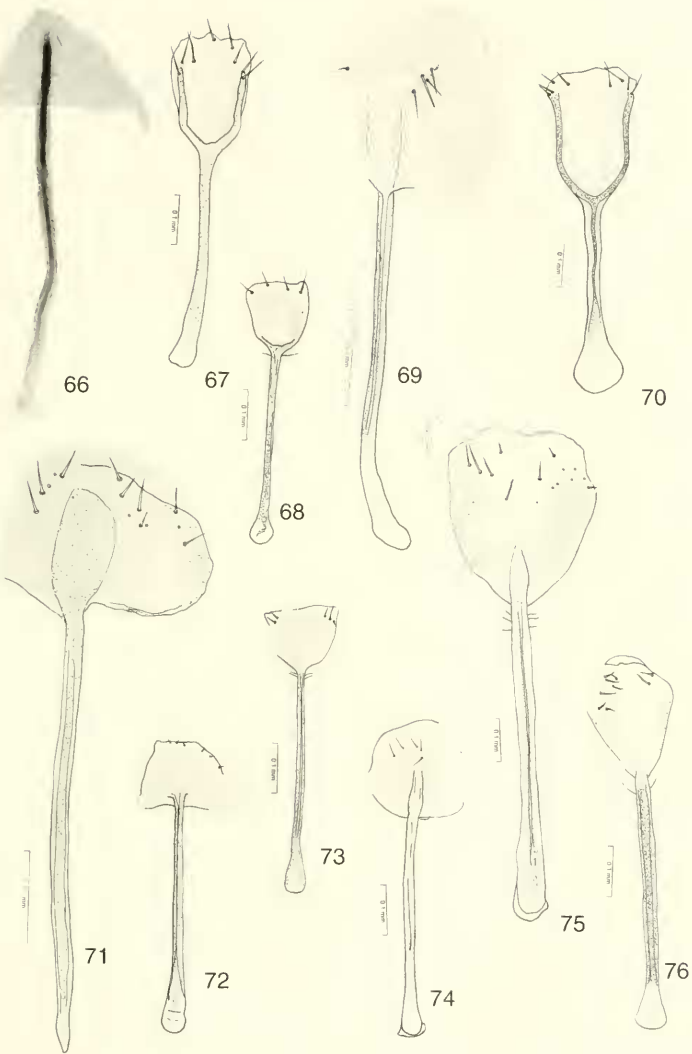
Description.—Body yellowish except darker (light brown) 7 last antennomeres and ventral side of body.

Vertex impunctate, smooth, without wrinkles. Sulci well developed, but not deep. Antennal calli subquadrate, transverse. Frontal ridge moderately short, narrow, between antennae slightly wider than above anterofrontal ridge. Anterofrontal ridge slightly arched, extremely narrow and low, medially without denticle. Basal palpomere of maxillary palpus longer than second; second thickened, shorter than third; third palpomere much narrower than second, pointed. Antenna not reaching basal 2/5 of elytron; second antennomere thicker but nearly as long as third, third shorter than fourth and fifth.

Pronotum slightly wider basally than apically, with lateral margins evenly curved. Anterolateral callosity moderately low, apically slightly lower than basally, moderately short, straight, forming obtuse denticle at setiferous pore. Pore situated at upper posterior face of callosity. Posterolateral callosity moderately wide and long, well-developed. Disc shiny, sparsely covered with small size, round, well defined punctures.

Scutellum wider than long, narrowly rounded at apex. Elytron with well developed humeral callus, without depression posteriorly. Sides convex, without convex ridges, maximum width at apical one third. Apical margin straight. Apex with obtuse denticle. Surface smooth, sparsely covered with small punctures forming poorly developed striae.

Metatibia straight in lateral view, apically widened, dorsally flat at apical two third;



Figs. 66–76. Tignum of *Aphthona*. 66, *A. atripes*. 67, *A. marataka*. 68, *A. mallotae*. 69, *A. nandicensis*. 70, *A. macarangae*. 71, *A. glochidionae*. 72, *A. phyllanthae*. 73, *A. tamila*. 74, *A. chrozophorae*. 75, *A. nigrilabris*. 76, *A. kanaraensis*.

remainder of surface slightly convex. First metatarsomere of male longer than remaining tarsomeres combined, basally as narrow as apically, apically slightly narrower than third metatarsomere. Metatibial spur curved, shorter than half of claw tarsomere.

Spermatheca with receptacle longer than pump. Internal side of receptacle convex, external side concave. Receptacle longer than wide, with maximum width above middle. Pump moderately wide, short, without denticle at apex. Horizontal part of pump short, longer than vertical. Duct with coils making loop away from receptacle (Fig. 50), points in opposite direction than receptacle. Tignum straight, slightly widening anteriorly. Posterior sclerotization without arms (Fig. 72). Vaginal palpus with membranous part in middle longer than sclerotized part anteriorly and posteriorly. Posterior sclerotization slightly longer than or as long as anterior. Lateral margin not parallel to medial, forming well developed angle to apex (Fig. 61).

Median lobe of aedeagus nearly straight in lateral view; distal portion of median lobe sinuous. Ventral side weakly convex, without ridge before apex. Apex as narrow as rest of lobe, triangular, slightly bent dorsally, with wide denticle. Dorsal opening nearly three times longer than wide (Fig. 29), distal margin almost straight, partially covered by single lamina narrower than apical opening and tapering towards end. Arms of tegmen shorter than stem (Fig. 39).

Measurements ( $n = 10$ ): Length 1.65–2.08 (1.70); width 0.75–1.08 (0.95); length of pronotum 0.35–0.45 (0.41); width of pronotum 0.53–0.68 (0.61); width across eyes 0.43–0.525 (0.50); distance between eyes 0.17–0.23 (0.21); length of aedeagus 0.75; length of vaginal palpi 0.39, length of receptacle 0.15.

Type material examined.—Holotype ♂. Labels: 1) India Karnataka, 1.1.1998, Bangalore, K. D. Prathapan Coll. 2) Holotype *Aphthona phyllanthae* sp. nov. des. Prathapan & Konstantinov, 2001 (USNM). Paratypes 19 ♂, 16 ♀. Same label as holotype

except for the date 2.1.1998 (2 BMNH, 27 KPPC, 2 PNCL, 2 UABI, 2 USNM).

Etymology.—This species is named after the genus of the host plants.

Remarks.—*Aphthona phyllanthae* keys out together with *A. kanaraensis*. It can be separated from it by the following characters: median lobe of aedeagus with short denticle apically and spermathecal duct with coils.

*Aphthona tamila*

Konstantinov and Lingafelter  
(Figs. 8, 19, 30, 40, 51, 62, 73)

*Aphthona tamila* Konstantinov and Lingafelter 2002:185 (type locality: Tamil Nadu, India). Holotype (TCOJ) examined).

Distribution.—India (Tamil Nadu) (Konstantinov and Lingafelter 2002).

Host plants.—*Drypetes* sp. (Euphorbiaceae).

Description.—Color yellow. Head, 8 apical antennomeres, scutellum, narrow stripe along elytral suture, meso- and metasterna, and apex of metafemur dark brown.

Vertex moderately flat, sparsely covered with fine wrinkles and punctures. In some specimens bottom of vertex with shallow, transverse impression. Frontal ridge moderately short and narrow, with convex surface and sides almost parallel, but with maximum width nearly between antennal sockets. Antennal calli moderately flat, almost as wide as long, nearly trapezoidal, forming obtuse angle to each other, widely connected. All sulci well developed. Supracallinal sulcus convex. Anterofrontal ridge with denticle in middle. Anterofrontal ridge in middle lower than frontal ridge. Frontoclypeal suture with two irregular, complete rows of setae. Clypeus long. Orbit narrow. Eye small, narrower than distance between eyes. Second antennomere much wider, but slightly shorter than third. Fifth antennomere slightly longer than fourth and sixth, separately.

Pronotum slightly wider basally than api-

cally, with sides convex. Maximum width nearly at middle. Lateral margin rather narrowly explanate, slightly narrower basally than apically. Anterolateral callosity moderately low, apically as high as basally, long, straight, forming obtuse denticle at setiferous pore. Posterolateral callosity well developed, longer than lateral margin, lateral margin forming indentation in front of callosity making it more prominent. Disc shiny, densely covered with medium sized punctures. Interspaces shagreened, shiny. Basal part of pronotum without any impressions.

Scutellum wider than long, narrowly rounded at apex. Sides nearly straight, strongly converging posteriorly. Elytron with well developed humeral callus, with extremely shallow depression posteriorly. Sides slightly convex, maximum width at apical third. Apical margin convex. Apex obtusely angulate. Surface shiny, covered with moderately small punctures, their diameter 1.5–2.0 times smaller than distance between punctures.

Metatibia moderately long, straight in lateral view, gradually widened apically, dorsally flat at apical half. First metatarsomere of female shorter than half of tibia, as narrow basally as apically, slightly narrower apically than third metatarsomere. In male, first metatarsomere wider apically than basally, nearly as wide as third metatarsomere.

Spermatheca with receptacle much longer than pump. Internal side of receptacle convex, external side slightly concave to straight. Receptacle elongate, much longer than wide, maximum width between middle and pump. Pump moderately wide at vertical part, as wide as base of horizontal part, moderately long, slightly curved, without denticle at apex. Vertical part of pump short, shorter than half of horizontal part. Duct not reaching middle of receptacle, making small loop away from receptacle, at base pointed in direction of receptacle (Fig. 51). Tignum nearly straight, gradually widening anteriorly. Posterior part poorly scler-

otized, relatively wide, parallel sided, not forming two arms (Fig. 73). Vaginal palpus with membranous part in middle nearly as long as sclerotized part posteriorly and anteriorly. Posterior sclerotization slightly narrower than anterior. Apical sclerotization laterally shorter than medially, slightly curved. Apical membrane oblique. Lateral margin not parallel to medial, not forming angle near apex. Medial margin slightly curved (Fig. 62).

Median lobe of aedeagus nearly straight in lateral view. Apically wider than basally. Apex of ventral part with narrow, short, and shallow impression (Fig. 8).

Measurements (n = 10): Length 1.52–1.80 (1.68), width 0.83–1.0 (0.90), length of pronotum 0.35–0.43 (0.39), width of pronotum 0.53–0.6 (0.56), width across eyes 0.43–0.48 (0.46), distance between eyes 0.18–0.21 (0.20), length of aedeagus 0.61, length of vaginal palpi 0.29, length of receptacle 0.16.

Type material examined.—*Aphthona tamila*: Holotype ♂. Labels: 1) India: Tamil N. [= Tamil Nadu] Coonoor, 1,700–1,900 m, 23–26.XI.1978, JAP-IND CO TR; 2) Holotype *Aphthona tamila* des. A. Konstantinov & S. Lingafelter (TCOJ). Paratypes, with same labels as holotype (9 TCOJ, 4 USNM). Paratypes, India: Tamil N. [= Tamil Nadu] Kotagiri, Nilgiri, 1,700 m, 29.XI.1978, JAP-IND CO TR. (7 TCOJ, 3 USNM). Paratypes, H. L. Andrewes Nilgiri Hills; Andrewes Bequest B.M. 1922–221 (6 BMNH, 1 USNM).

Material examined.—INDIA: Tamil Nadu, Naduvattom, 26.X.1998, ex. *Drypetes* sp K. D. Prathapan Coll. (38 KPPC, 2 USNM).

Remarks.—*Aphthona tamila* can be separated from other species of *Aphthona* in Southern India by the much darker color of the head and the elytral suture, and also by several unique features of the median lobe of the aedeagus and spermatheca.

#### ACKNOWLEDGMENTS

We thank M. Cludts (ISNB), M. Brancucci and E. Sprecher-Uebersax (NHMB),



and H. Takizawa (TCOJ) for the opportunity to study material in their care. We are also grateful to M. Danilevsky (A. N. Severtzov Institute of Ecology and Evolution, Moscow, Russia), W. Flowers (Florida A&M University, Tallahassee, FL), A. L. Norrbom and A. Solis (Systematic Entomology Laboratory, Washington, DC), and C. Staines (Smithsonian Institution, Washington, DC) for reviewing this manuscript and providing valuable suggestions. The senior author is grateful to Dr. C. A. Viraktamath (Department of Entomology, University of Agricultural Sciences, Bangalore, India) for guidance, support, and constant encouragement; to Dr. Balakrishne Gowda (University of Agricultural Sciences, Bangalore, India) for identifying the plants; to the former and current Directors of the Indian Institute of Spices Research, Dr. K. V. Peeter and Dr. Y. R. Sarma, for granting study leave; and to Indian Council of Agricultural Research, New Delhi for awarding him a Senior Research Fellowship.

## LITERATURE CITED

- Chen, S. H. 1934. Revision of the Halticinae (Col. Chrysomelidae) of Yunnan and Tonkin. *Sinensia* 3 & 4: 225-416.
- . 1936. Notes on some flea-beetles from tropical Asia (II). *Sinensia* 7(1): 80-88.
- Chûjô, M. 1961. Family Chrysomelidae. *Nature and Life in Southeast Asia* 1: 347-357.
- Duvivier, A. 1892. Les Phytophages du Chota-Nagpore. 2 Note. *Annales de la Société Entomologique de Belgique* 36: 396-449.
- Gressitt, J. L. and S. Kimoto. 1963. The Chrysomelidae (Coleoptera) of China and Korea. Part 2. *Pacific Insects Monograph* 1b: 743-893.
- Grucev, B. 1985. Leaf beetles collected by P. Beron and S. Andreev from the National Museum (Natural History)—Sofia in India, Sri Lanka, Nepal, Burma and Thailand in 1981 and 1984 (Coleoptera, Chrysomelidae). *Entomological Review of Japan* 40: 35-47.
- . 1988. Check-liste der Arten von Eumolpinae, Chrysomelinae, Alticinae, Hispinae und Cassidinae in Afghanistan (Coleoptera, Chrysomelidae). *Entomological Review of Japan* 43(2): 145-170.
- Heikertinger, F. 1944. Bestimmungstabellen europäischer Käfer. LXXXII. Fam. Chrysomelidae. 5. Subfam. Halticinae. 2. Gatt. *Aphthona* Chev. *Ko-  
leopterologische Rundschau* 30(1/3): 37/123-124/209.
- Heikertinger, F. and E. Csiki. 1939. Chrysomelidae: Halticinae 1. *In* Junk, W. *Coleopterorum Catalogus*. Pars 166. Gravenhage, 336 pp.
- Jacoby, M. 1896. Descriptions of the new genera and species of phytophagous Coleoptera obtained by Mr. Andrewes in India. *Annales de la Société Entomologique de Belgique* 40: 250-271.
- . 1898. Description of some new species of Indian phytophagous Coleoptera. *Annales de la Société Entomologique de Belgique* 42: 185-191.
- . 1903. Descriptions of new genera and species of phytophagous Coleoptera obtained by Mr. H.-E. Andrewes and Mr. T.-R.-D. Bell at the Nilgiri Hills and Kanara. *Annales de la Société Entomologique de Belgique* 47: 80-128.
- Jolivet, P. and T. J. Hawkeswood. 1995. Host plants of Chrysomelidae of the world: an essay about relationships between the leaf beetles and their food plants. *Backhuys Publishers*, Leiden, 281 pp.
- Kimoto, S. 1972. A list of Chrysomelid beetles collected by Prof. K. Yasumatsu in India and Pakistan in 1963 (Col: Chrysomelidae). *Entomological Review of Japan* 24(1 & 2): 43-48.
- . 2000. Chrysomelidae (Coleoptera) of Thailand, Cambodia, Laos and Vietnam. VII. Alticinae. *Bulletin of the Comparative Studies of International Cultures and Societies*, Kurume University 26: 103-299.
- . 2001. The Chrysomelidae (Insecta: Coleoptera) collected by the Kyushu University Scientific Expedition to the Nepal Himalaya in 1971 and 1972. *Bulletin, Kitakyushu Museum of Natural History* 20: 17-80.
- Konstantinov, A. S. 1996. Genus *Aphthona* Chevrolat (Coleoptera: Chrysomelidae: Alticinae) in Eastern Europe and the Caucasus (distribution, habitats, host plants, and history of fauna), pp. 37-55. *In* Jolivet, P. H. A. and M. L. Cox, eds. *Chrysomelidae Biology*, Vol. 3: General Studies. SPB Academic Publishing, Amsterdam, 365 pp.
- . 1998. Revision of the Palearctic species of *Aphthona* Chevrolat and cladistic classification of the Aphthonini (Coleoptera: Chrysomelidae: Alticinae). *Associated Publishers*, *Memoirs on Entomology*, International 11, 429 pp.
- Konstantinov, A. S. and S. W. Lingafelter. 2002. Revision of the Oriental species of *Aphthona* Chevrolat (Coleoptera: Chrysomelidae). *Miscellaneous Publication of the Entomological Society of Washington*, Washington, DC, 349 pp.
- Lopatin, I. K. 1963. Die Chrysomeliden (Coleoptera) Afghanistans auf Grund der Ergebnisse der Forschungsreise des Herr J. Klapperich in den Jahren 1952-53. *Annales Historico-Naturales Musei Nationalis Hungarici*. Pars Zoologica 55: 349-378.
- Mathur, R. N. and Balwant Singh. 1959a. A list of

- insect pests of forest plants in India and the adjacent countries. Part 5. Indian Forest Bulletin (New Series), Entomology 171(4): 1-165.
- . 1959b. A list of insect pests of forest plants in India and the adjacent countries. Part 8. Indian Forest Bulletin (New Series), Entomology 171(7): 1-130.
- Maulik, S. 1926. The Fauna of British India including Ceylon and Burma. Coleoptera, Chrysomelidae (Chrysomelinae and Halticinae). London, 442 pp.
- Medvedev, L. N. and E. Sprecher-Uebersax. 1999. Katalog der Chrysomelidae von Nepal. Entomologica Basiliensia 21: 261-354.
- Motschulsky, V. 1866. Essai d'un Catalogue des Insectes de l'île de Ceylon. Supplement. Bulletin de la Société Impériale des Naturalistes de Moscow 39(1, 2): 393-446.
- Myers, N., R. A. Meitnermeier, C. G. Meitnermeier, G. A. B. da Fonseca and J. Kent. 2000. Biodiversity hotspots for conservation priorities. Nature 403: 853-858.
- Nayar, M. P. 1996. Hot spots of endemic plants of India, Nepal and Bhutan. TBGRI, Trivandrum, 252 pp.
- Ogloblin, D. 1930. De quelques espèces de Halticinae (Col. Chrysomelidae) de la collection de V. Motschoulsky. Eos 6: 83-112.
- Scherer, G. 1969. Die Alticinae des indischen subkontinentes (Coleoptera—Chrysomelidae). Pacific Insects Monograph 22: 1-251.
- Takizawa, H. 1983. Chrysomelid-beetles of India in the collection of the National Institute of Agricultural Sciences, Tsukuba. (Coleoptera). Entomological Review of Japan 38(1): 65-79.
- Zuka-ur-Rab, 1991. Leaf mining Coleoptera of the Indian subcontinent. Journal of Entomological Research 15(1): 20-30.